Claims 4, 8-9, 13-14 and 18 claims both an apparatus and the method steps of using the apparatus is indefinite. Claims 4-18 are also rejected under 35 U.S.C. 101 because the claims are directed to neither a "process" nor a "device," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only.

Applicants have addressed this rejection by replacing the claims with new claims 19-24, which clearly recite a method.

Claim rejections under 35 U.S.C. §102

Claims 4-8 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,634,229 to Amstutz et al.

Claim rejections under 35 U.S.C. §103

Claims 9-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Amstutz et al.

Applicants' Response to Claim Rejections

Applicants note that the present invention, as herein amended, is a method of driving a liquid crystal shutter including a nematic liquid crystal having a twisted angle equal to or greater than 180°, and the liquid crystal shutter demonstrates an initial opened state at no applied voltage after another opened state exhibiting maximum transmittance higher than a transmittance in the initial opened state when voltage applied to pixels is turned off, as described in Fig. 6.

Hence, to obtain the maximum transmittance in such a liquid crystal shutter, it is needed that a voltage is once applied to the liquid crystal shutter in order to render the shutter closed, and then the voltage is turned off (set to 0V). Further, the transmittance decreases when a holding time passes. Accordingly, subsequent data must be sent to the liquid crystal shutter before the holding time passes.

That is, whether the liquid crystal shutter demonstrates an opened state or a closed state must be decided (in a scan term) within a period during which the liquid crystal shutter keeps the maximum transmittance, and a term (= a reset term) during which all the pixels are rendered closed must be provided before whether the shutter demonstrates an opened state or a closed state is decided next by the subsequent data.

Accordingly, in this invention, the maximum transmittance can be obtained in the opened state by setting the reset term in the holding time before a voltage based on the subsequent data is applied to the shutter within a period during which the liquid crystal shutter keeps the maximum transmittance, thereby a high contrast can be obtained.

Amstutz et al. discloses a liquid crystal display apparatus comprising an STN liquid crystal having a twist angle equal to or greater than 180°. However, it does not disclose that "the liquid crystal shutter demonstrates an initial opened state at no applied voltage after another opened state exhibiting maximum transmittance higher than a transmittance in the initial opened state when voltage applied to pixels is turned off at all. Thus, it does not disclose that the maximum transmittance can be obtained in the opened state by setting the reset term before the scan term, thereby a high contrast can be obtained, either.

For at least the foregoing reasons, Applicants submit that the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by Applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone Applicants' undersigned attorney.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. **01-2340**.

Respectfully submitted,

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Enclosures: Version with Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please cancel claims 4-18.

Please add new claims 19-24 as follows:

19. (New) A method of driving a liquid crystal shutter including:

a nematic liquid crystal having a twisted angle equal to or greater than 180° sandwiched between a pair of substrates; and

pixels;

which demonstrates an initial opened state at no applied voltage after another opened state exhibiting maximum transmittance higher than a transmittance in said initial opened state when voltage applied to said pixels is turned off, said method comprising the steps of:

setting a scan term during which said pixels are rendered opened or closed such that said scan term is shorter than a holding time during which said liquid crystal shutter keeps said maximum transmittance; and

setting a reset term during which all said pixels are rendered closed by applying voltage to all said pixels before said scan term.

20. (New) The method of driving a liquid crystal shutter according to claim 19, further comprising a step of applying a positive or negative driving voltage to said pixels of said liquid crystal shutter

during a partial period within said scan term and applying a driving voltage of 0V to said pixels during a remaining period within said scan term,

wherein said remaining period during which said driving voltage of 0V is applied is varied, in order to perform a gradation display.

21. (New) The method of driving a liquid crystal shutter according to claim 19, further comprising a step of applying voltage to said pixels of said liquid crystal shutter during said scan term, wherein said voltage applied in said scan term is varied from 0V in order to perform a gradation display.

22. (New) The method of driving a liquid crystal shutter according to claim 19, further comprising at least one of the following steps:

lengthening said scan term at a time of a low operating temperature, and

shortening said scan term at a time of a high operating temperature.

23. (New) A method of driving a liquid crystal shutter including: a nematic liquid crystal having a twisted angle equal to or greater than 180° sandwiched between a pair of substrates; a pair of polarizing plates having respective absorption axes which are substantially orthogonal to each other and angled within a range of ±40° to ±50° relative to a direction in which intermediate liquid crystal molecules are oriented; and pixels, which demonstrates an initial opened state at no applied voltage after another opened state exhibiting maximum transmittance higher than a transmittance in said

initial opened state when voltage applied to said pixels is turned off, said method comprising steps of:

setting a scan term during which said pixels are rendered opened or closed such that said scan term is shorter than a holding time during which said liquid crystal shutter keeps said maximum transmittance; and

setting a reset term during which all said pixels are rendered closed by applying voltage to all said pixels before said scan term.

24. (New) A method of driving a liquid crystal shutter including: a nematic liquid crystal having a twisted angle equal to or greater than 180° sandwiched between a pair of substrates; a pair of polarizing plates having respective absorption axes which are substantially orthogonal to each other; and pixels, which demonstrates an initial opened state at no applied voltage after another opened state exhibiting maximum transmittance higher than transmittance in said initial opened state when voltage applied to said pixels is turned off, and wherein Δnd value lies within a range of 600 to 900 nm, said Δnd value being a product of a birefringence Δn of said nematic liquid crystal and a gap d between said pair of substrates, said method comprising steps of:

setting a scan term during which said pixels are rendered opened or closed such that said scan term is shorter than a holding time during which said liquid crystal shutter keeps said maximum transmittance; and

setting a reset term during which all said pixels are rendered closed by applying voltage to all said pixels before said scan term.